Geometry Core Content and 23 Standards

MA-H-G-1	Students will find angle relationships such as vertical angles, linear pairs, complementary angles, and supplementary angles.
MA-H-G-2	Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.
MA-H-G-3	Students will find the intersection of lines, planes, and solids.
MA-H-G-4	Students will connect geometric diagrams with algebraic representations.
MA-H-G-5	Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.
MA-H-G-6	Students will describe, draw, and construct two-dimensional and three-dimensional figures.
MA-H-G-7	Students will use angle and side relationships such as triangle sum theorem, triangle inequalities, isosceles and equilateral triangle properties, altitude, and median.
MA-H-G-8	Students will use Pythagorean theorem and its converse.
MA-H-G-9	Students will use right triangle relationships such as trigonometric ratios (45-45-90 and 30-60-90 triangles).
MA-H-G-10	Students will use properties of quadrilaterals such as classification.
MA-H-G-11	Students will use properties of other polygons.
MA-H-G-12	Students will use properties of circles, arcs, chords, central angles, inscribed angles, and concentric circles.
MA-H-G-13	Students will use inscribed and circumscribed polygons.
MA-H-G-14	Students will prove triangles and other polygons congruent and similar, and explore corresponding parts relationships.
MA-H-G-15	Students will use proportional reasoning to solve real-world problems, to do indirect measurements, and to make scale drawings.

MA-H-G-16	Students will use relationships among one-, two-, and three-dimensional measures.
MA-H-G-17	Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.
MA-H-G-18	Students will convert from one measure to another within the same system.
MA-H-G-19	Students will represent geometric figures and properties using coordinates.
MA-H-G-20	Students will connect the concepts of slope, distance, and midpoint to coordinate geometry.
MA-H-G-21	Students will use reflections, translations, rotations, and dilations.
MA-H-G-22	Students will explore concepts of vectors.
MA-H-G-23	Students will use the relationship between a figure and its image under a transformation (congruence, similarity, size, and scale changes).

GEOMETRY/SITE LAYOUT AND FOUNDATIONS
INTERDISCIPLINARY COURSE

Second Week **Lay out floor plan on plot with property line.**

Geometric Terms

ordered pairs — coordinate pairs
slope — distance
midpoint

Geometric Concepts

1. proportional reasoning
2. scale drawings
3. converting measures
4. plotting points
5. determine slope, distance, and midpoint using coordinates

References

	Cord Geometry	Applied Mathematics
1.	p. 6.8	Unit 9
2.	p. 6.8	Unit 9
3.		Unit 3
4.	p. 7.8	Unit 35
5.	p. 7.8	Unit 35

Third Week **Lay out a building site with a transit.**

Geometric Terms

perpendicular	parallel
betweenness of points	midpoint
distance	collinear
coplanar	skew
angle bisector	circles
arcs	polygon
isosceles triangle	equilateral triangle
altitude	median
quadrilateral	
parallelogram	rhombus
rectangle	square
trapezoid	
slope	sine
cosine	tangent
SOHCAHTOA	constructions

Geometric Concepts

1. Connect geometric diagrams with algebraic representations.
2. Use relationships of perpendicular and parallel lines in various designs.
3. Determine slope, distance, and midpoint.
4. Pythagorean theorem.
5. Use trig ratios to determine angle and side measures.
6. Convert from one measure to another
7. Constructions of various geometric figures.
8. Find angle relationships using triangle sum theorem, triangle inequality theorem, etc.
9. Determine the angle and side measures of various quadrilaterals.

References

	Cord Geometry	Applied Mathematics
1.		
2.	p. 1.33	Unit 6
3.	p. 7.8	Unit 35
4.	p. 6.36	Unit 21
5.	p. 11.55	Unit 22
6.		Unit 3
7.	pp. 1.36-40	
8.	p. 3.32, p. 3.43	Unit 6
9.		

Fourth Week **Establish plot boundary line.**

Refer to week one.

Fifth Week **Elevation of site.**

Geometric Terms

sine	cosine
tangent	SOHCAHTOA
perimeter	circumference
area	

Geometric Concepts

1. Use trig ratios to determine angle and side measures.
2. Convert from one measure to another
3. Determine perimeter, circumference, and area of various figures.
4. Proportional reasoning

References

	Cord Geometry	Applied Mathematics
1.	p. 11.55	Unit 22
2.		Unit 3
3.	pp. 8.8, 8.14, 8.20, 8.24, 8.29	Unit 7
4.	p. 6.8	Unit 9

Sixth Week **Locate corners using triangulation, also parallel and diagonal.**

Geometric Terms

- quadrilateral
  - parallelogram
  - rectangle
  - rhombus
  - square
- parallel
- diagonal

Geometric Concepts

1. Pythagorean theorem
2. Converse of Pythagorean theorem
3. Properties of quadrilaterals, especially as relate to the diagonal.
4. Convert one measure to another.

References

	Cord Geometry	Applied Mathematics
1.	p. 6.36	Unit 21
2.	p. 6.35	Unit 21
3.	pp. 5.16-44	
4.		Unit 33
5.		

Seventh Week **Locate corners using a builder's transit.**

Geometric Terms

- perpendicular
- parallel
- betweenness of points
- midpoint
- distance
- collinear
- coplanar
- skew
- angle bisector
- circles
- arcs
- polygon
- isosceles triangle
- equilateral triangle
- altitude
- median
- quadrilateral
  - parallelogram
  - rhombus
  - rectangle
  - square
  - trapezoid
- slope
- sine
- cosine
- tangent
- SOHCAHTOA
- constructions

Geometric Concepts

1. Connect geometric diagrams with algebraic representations.
2. Use relationships of perpendicular and parallel lines in various designs.
3. Determine slope, distance, and midpoint.
4. Pythagorean theorem.
5. Use trig ratios to determine angle and side measures.
6. Convert from one measure to another
7. Constructions of various geometric figures.
8. Find angle relationships using triangle sum theorem, triangle inequality theorem, etc.

9. Determine the angle and side measures of various quadrilaterals.

References

	Cord Geometry	Applied Mathematics
1.		
2.	p. 1.33	Unit 6
3.	p. 7.8	Unit 35
4.	p. 6.36	Unit 21
5.	p. 11.55	Unit 22
6.		Unit 3
7.	pp. 1.36-40	
8.	pp. 3.32, 3.43	Unit 6
9.		

Eighth Week **Align installations for level.**

Geometric Terms

distance midpoint
betweenness of points collinear
coplanar ordered pairs
coordinate plane

Geometric Concepts and Theorems

1. Represent figures using coordinates.
2. Determine midpoint and distance on a coordinate system.
3. Identify betweenness, midpoint, collinear, and coplanar.

References

	Cord Geometry	Applied Mathematics
1.	p. 7.8	Unit 35
2.	p. 7.8	Unit 35
3.	p. 1.9	Unit 6

Ninth Week **Calculate the quantity of concrete block and common face brick needed for a concrete block wall.**

Geometric Terms

perimeter circumference
area

Geometric Concepts and Theorems

1. Determine the surface area of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.39, 10.51	Unit 8
2.		Unit 3

Tenth Week **Calculate the amount of concrete needed for footings and foundation wall.**

Geometric Terms

- perimeter
- area
- volume
  - triangular prism
  - cylinder
  - cone
  - rectangular prism
  - sphere
  - pyramid
- circumference

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
2.		Unit 3

Eleventh Week **Construct footing forms.**

Geometric Terms

- perimeter
- area
- volume
  - triangular prism
  - cylinder
  - cone
  - rectangular prism
  - sphere
  - pyramid
- circumference

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
7.		Unit 3

Twelfth Week Construct step footing forms.

Geometric Terms

- perimeter — circumference
- area
- volume
  - triangular prism — rectangular prism
  - cylinder — sphere
  - cone — pyramid

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
2.		Unit 3

Thirteenth Week Cut and install footing forms.

Geometric Terms

- perimeter — circumference
- area
- volume
  - triangular prism — rectangular prism
  - cylinder — sphere
  - cone — pyramid

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
2.		Unit 3

Fourteenth Week Cut and install wall forms.

Geometric Terms

- perimeter — circumference
- area
- volume
  - triangular prism — rectangular prism
  - cylinder — sphere
  - cone — pyramid

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
2.		Unit 3

Fifteenth Week Cut and install column and pier forms.

Geometric Terms

- perimeter — circumference
- area
- volume
  - triangular prism — rectangular prism
  - cylinder — sphere
  - cone — pyramid

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
2.		Unit 3

Sixteenth Week Cut and install forms for concrete stairs.

Geometric Terms

- vertical angles
- linear pairs
- complementary angles
- supplementary angles
- quadrilaterals
  - parallelogram
  - rhombus
  - rectangle
  - square
  - trapezoid
- congruence
- similarity
- ways to prove triangles congruent: SSS, SAS, ASA
- CPCTC
- perimeter
- circumference
- volume
- surface area
- slope
- distance
- midpoint
- ordered pairs
- coordinate plane
- transformations
- rotations
- reflections
- dilations
- translations
- scale change

Geometric Concepts and Theorems

1. Finding angle relationships such as vertical angles.
2. Draw and construct two- and three-dimensional figures.
3. Use translations, reflections, rotations, and dilations.
4. Determine perimeter, surface area, and volume as related to stairs.
5. Apply slope, distance, and midpoint to design, draw, and construct stairs.
6. Use CPCTC to design, draw, and construct stairs.
7. Apply properties of special quadrilaterals to design, draw, and construct stairs.
8. Apply concept of similarity to design, draw, and construct stairs.
9. Convert from one measure to another.

References

	Cord Geometry	Applied Mathematics
1.	p. 1.23	Unit 6
2.	pp. 1.36-40	
3.	pp. 11.16, 11.23 11.29	Unit 37
4.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
5.	p. 7.24	Unit 35
6.	p. 4.15	
7.	p. 5.18	
8.	p. 6.10	Unit 9
8.		Unit 3

Seventeenth Week Dismantle concrete forms, clean and repair concrete forms.

Eighteenth Week Review and revise task.

MA-H-G-22 Students will explore concepts of vectors.
This program of studies bullet is not directly addressed in the content of either of the two courses. This topic will need to be addressed through the use of materials recommended in the attached documents.

Students could complete this requirement by completing an NCTM Illuminations lesson located at the following URL:
http://standards.nctm.org/document/eexamples/chap7/7.1/index.htm

There are other online resources that are also available. A complete online geometry course can be accessed, for a fee of $300 for a classroom of 20 students can be found at:
http://www.migrant.org/index.cfm

Second Week Lay out floor plan on plot with property line.

Geometric Terms

ordered pairs	coordinate pairs
slope	distance
midpoint	

Geometric Concepts

1. proportional reasoning
2. scale drawings
3. converting measures
4. plotting points
5. determine slope, distance, and midpoint using coordinates

References

	Cord Geometry	Applied Mathematics
1.	p. 6.8	Unit 9
2.	p. 6.8	Unit 9
9.		Unit 3
4.	p. 7.8	Unit 35
5.	p. 7.8	Unit 35

Third Week Lay out a building site with a transit.

Geometric Terms

perpendicular	parallel
betweenness of points	midpoint
distance	collinear
coplanar	skew
angle bisector	circles
arcs	polygon
isosceles triangle	equilateral triangle
altitude	median
quadrilateral	
parallelogram	rhombus
rectangle	square
trapezoid	
slope	sine
cosine	tangent
SOHCAHTOA	constructions

Geometric Concepts

1. Connect geometric diagrams with algebraic representations.
2. Use relationships of perpendicular and parallel lines in various designs.
3. Determine slope, distance, and midpoint.
4. Pythagorean theorem.
5. Use trig ratios to determine angle and side measures.
6. Convert from one measure to another
7. Constructions of various geometric figures.
8. Find angle relationships using triangle sum theorem, triangle inequality theorem, etc.
9. Determine the angle and side measures of various quadrilaterals.

References

	Cord Geometry	Applied Mathematics
1.		
2.	p. 1.33	Unit 6
3.	p. 7.8	Unit 35
4.	p. 6.36	Unit 21
5.	p. 11.55	Unit 22
6.		Unit 3
7.	pp. 1.36-40	
8.	p. 3.32, p. 3.43	Unit 6
9.		

Fourth Week **Establish plot boundary line.**

Refer to week one.

Fifth Week **Elevation of site.**

Geometric Terms

sine	cosine
tangent	SOHCAHTOA
perimeter	circumference
area	

Geometric Concepts

1. Use trig ratios to determine angle and side measures.
2. Convert from one measure to another
3. Determine perimeter, circumference, and area of various figures.
4. Proportional reasoning

References

	Cord Geometry	Applied Mathematics
1.	p. 11.55	Unit 22
2.		Unit 3
3.	pp. 8.8, 8.14, 8.20,	Unit 7

8.24, 8.29

4. p. 6.8 Unit 9

Sixth Week **Locate corners using triangulation, also parallel and diagonal.**

Geometric Terms

- quadrilateral
  - parallelogram
  - rectangle
  - rhombus
  - square
- parallel
- diagonal

Geometric Concepts

1. Pythagorean theorem
2. Converse of Pythagorean theorem
3. Properties of quadrilaterals, especially as relate to the diagonal.
4. Convert one measure to another.

References

	Cord Geometry	Applied Mathematics
1.	p. 6.36	Unit 21
2.	p. 6.35	Unit 21
3.	pp. 5.16-44	
10.		Unit 33
11.		

Seventh Week **Locate corners using a builder's transit.**

Geometric Terms

- perpendicular
- parallel
- betweenness of points
- midpoint
- distance
- collinear
- coplanar
- skew
- angle bisector
- circles
- arcs
- polygon
- isosceles triangle
- equilateral triangle
- altitude
- median
- quadrilateral
  - parallelogram
  - rectangle
  - trapezoid
  - rhombus
  - square
- slope
- sine
- cosine
- tangent
- SOHCAHTOA
- constructions

Geometric Concepts

1. Connect geometric diagrams with algebraic representations.
2. Use relationships of perpendicular and parallel lines in various designs.
3. Determine slope, distance, and midpoint.
4. Pythagorean theorem.
5. Use trig ratios to determine angle and side measures.
6. Convert from one measure to another
7. Constructions of various geometric figures.
8. Find angle relationships using triangle sum theorem, triangle inequality theorem, etc.

9. Determine the angle and side measures of various quadrilaterals.

References

	Cord Geometry	Applied Mathematics
1.		
2.	p. 1.33	Unit 6
3.	p. 7.8	Unit 35
4.	p. 6.36	Unit 21
5.	p. 11.55	Unit 22
12.		Unit 3
7.	pp. 1.36-40	
8.	pp. 3.32, 3.43	Unit 6
9.		

Eighth Week **Align installations for level.**

Geometric Terms

distance
betweenness of points
coplanar
coordinate plane
midpoint
collinear
ordered pairs

Geometric Concepts and Theorems

1. Represent figures using coordinates.
2. Determine midpoint and distance on a coordinate system.
3. Identify betweenness, midpoint, collinear, and coplanar.

References

	Cord Geometry	Applied Mathematics
1.	p. 7.8	Unit 35
2.	p. 7.8	Unit 35
3.	p. 1.9	Unit 6

Ninth Week **Calculate the quantity of concrete block and common face brick needed for a concrete block wall.**

Geometric Terms

perimeter
area
circumference

Geometric Concepts and Theorems

1. Determine the surface area of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.39, 10.51	Unit 8
2.		Unit 3

Tenth Week **Calculate the amount of concrete needed for footings and foundation wall.**

Geometric Terms

perimeter — circumference
area
volume
- triangular prism — rectangular prism
- cylinder — sphere
- cone — pyramid

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
2.		Unit 3

Eleventh Week **Construct footing forms.**

Geometric Terms

perimeter — circumference
area
volume
- triangular prism — rectangular prism
- cylinder — sphere
- cone — pyramid

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
13.		Unit 3

Twelfth Week **Construct step footing forms.**

Geometric Terms

- perimeter
- circumference
- area
- volume
  - triangular prism
  - rectangular prism
  - cylinder
  - sphere
  - cone
  - pyramid

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
2.		Unit 3

Thirteenth Week **Cut and install footing forms.**

Geometric Terms

- perimeter
- circumference
- area
- volume
  - triangular prism
  - rectangular prism
  - cylinder
  - sphere
  - cone
  - pyramid

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
2.		Unit 3

Fourteenth Week **Cut and install wall forms.**

Geometric Terms

- perimeter — circumference
- area
- volume
  - triangular prism — rectangular prism
  - cylinder — sphere
  - cone — pyramid

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
2.		Unit 3

Fifteenth Week **Cut and install column and pier forms.**

Geometric Terms

- perimeter — circumference
- area
- volume
  - triangular prism — rectangular prism
  - cylinder — sphere
  - cone — pyramid

Geometric Concepts and Theorems

1. Determine the surface area and volume of various three-dimensional figures.
2. Converting measures.

References

	Cord Geometry	Applied Mathematics
1.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
2.		Unit 3

Sixteenth Week Cut and install forms for concrete stairs.

Geometric Terms

- vertical angles
- linear pairs
- complementary angles
- supplementary angles
- quadrilaterals
  - parallelogram
  - rhombus
  - rectangle
  - square
  - trapezoid
- congruence
- similarity
- ways to prove triangles congruent: SSS, SAS, ASA
- CPCTC
- perimeter
- circumference
- volume
- surface area
- slope
- distance
- midpoint
- ordered pairs
- coordinate plane
- transformations
- rotations
- reflections
- dilations
- translations
- scale change

Geometric Concepts and Theorems

1. Finding angle relationships such as vertical angles.
2. Draw and construct two- and three-dimensional figures.
3. Use translations, reflections, rotations, and dilations.
4. Determine perimeter, surface area, and volume as related to stairs.
5. Apply slope, distance, and midpoint to design, draw, and construct stairs.
6. Use CPCTC to design, draw, and construct stairs.
7. Apply properties of special quadrilaterals to design, draw, and construct stairs.
8. Apply concept of similarity to design, draw, and construct stairs.
9. Convert from one measure to another.

References

	Cord Geometry	Applied Mathematics
1.	p. 1.23	Unit 6
2.	pp. 1.36-40	
3.	pp. 11.16, 11.23 11.29	Unit 37
4.	pp. 10.23, 10.31, 10.39, 10.44, 10.51	Unit 8
5.	p. 7.24	Unit 35
6.	p. 4.15	
7.	p. 5.18	
8.	p. 6.10	Unit 9
14.		Unit 3

Seventeenth Week **Dismantle concrete forms, clean and repair concrete forms.**

Eighteenth Week **Review and revise task.**

MA-H-G-22 Students will explore concepts of vectors.
This program of studies bullet is not directly addressed in the content of either of the two courses. This topic will need to be addressed through the use of materials recommended in the attached documents.

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http://standards.nctm.org/document/eexamples/chap7/7.1/index.htm

There are other online resources that are also available. A complete online geometry course can be accessed, for a fee of $300 for a classroom of 20 students can be found at:
http://www.migrant.org/index.cfm

GEOMETRY/FLOOR AND WALL FRAMING

Interdisciplinary Task List Alignment

Task 1 Install sill plates to foundation walls

MA-H-G-1 Students will find angle relationships such as vertical angles, linear pairs, complementary angles, and supplementary angles.

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-3 Students will find the intersection of lines, planes, and solids.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons

MA-H-G-8 Students will use Pythagorean theorem and its converse.

Task 2 Install floor joist

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

MA-H-G-19 Students will represent geometric figures and properties using coordinates.

Task 3 Install Lally posts

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 4 Install steel beams

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 5 Install wood beams

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 6 Frame built-up girders

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 7 Frame floor openings

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 8 Lay sub-floors and underlayment

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 9 Cut and install stair components

MA-H-G-1 Students will find angle relationships such as vertical angles, linear pairs, complementary angles, and supplementary angles.

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-3 Students will find the intersection of lines, planes, and solids.

MA-H-G-4 Students will connect geometric diagrams with algebraic representations.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

MA-H-G-6 Students will describe, draw, and construct two-dimensional and three-dimensional figures.

MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.

Task 10 Lay out and install stairs

MA-H-G-4 Students will connect geometric diagrams with algebraic representations.

MA-H-G-19 Students will represent geometric figures and properties using coordinates.

MA-H-G-20 Students will connect the concepts of slope, distance, and midpoint to coordinate geometry.

Task 11 Construct, lay out and install exterior walls

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 12 Frame wall openings

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 13 Lay out, construct, install and frame partition walls

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 14 Install exterior wall sheathing

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 15 Frame special partitions

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

MA-H-G-22 Students will explore concepts of vectors.

This program of studies bullet is not directly addressed in the content of either of the two courses. This topic will need to be addressed through the use of materials recommended in the attached documents.

Students could complete this requirement by completing an NCTM Illuminations lesson located at the following URL:

http://standards.nctm.org/document/eexamples/chap7/7.1/index.htm

There are other online resources that are also available. A complete online geometry course can be accessed, for a fee of $300 for a classroom of 20 students can be found at:

http://www.migrant.org/index.cfm

02/07/03

Ceiling and Roof Framing

Task List/Program of Studies Alignment

Task 1 Plan a Roof System

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

MA-H-G-6 Students will describe, draw, and construct two-dimensional and three-dimensional figures.

MA-H-G-7 Students will use angle and side relationships such as triangle sum theorem, triangle inequalities, isosceles and equilateral triangle properties, altitude, and median.

MA-H-G-8 Students will use Pythagorean theorem and its converse.

MA-H-G-9 Students will use right triangle relationships such as trigonometric ratios (45-45-90 and 30-60-90 triangles).

MA-H-G-15 Students will use proportional reasoning to solve real world problems, to do indirect measurements, and to make scale drawings.

MA-H-G-18 Students will convert from one measure to another within the same system.

MA-H-G-19 Students will represent geometric figures and properties using coordinates.

MA-H-G-20 Students will connect the concepts of slope, distance, and midpoint to coordinate geometry.

Task 2 Lay out, cut and erect rafters to build a gable roof

MA-H-G-1 Students will find angle relationships such as vertical angles, linear pairs, complementary angles, and supplementary angles.

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-4 Students will connect geometric diagrams with algebraic representations.

MA-H-G-7 Students will use angle and side relationships such as triangle sum theorem, triangle inequalities, isosceles and equilateral triangle properties, altitude, and median.
MA-H-G-8 Students will use Pythagorean theorem and its converse.
MA-H-G-9 Students will use right triangle relationships such as trigonometric ratios (45-45-90 and 30-60-90 triangles).
MA-H-G-14 Students will prove triangles and other polygons congruent and similar, and explore corresponding parts relationships.
MA-H-G-18 Students will convert from one measure to another within the same system.

Task 3 Lay out, cut and erect rafters to build a gambrel roof

MA-H-G-7 Students will use angle and side relationships such as triangle sum theorem, triangle inequalities, isosceles and equilateral triangle properties, altitude, and median.
MA-H-G-8 Students will use Pythagorean theorem and its converse.
MA-H-G-9 Students will use right triangle relationships such as trigonometric ratios (45-45-90 and 30-60-90 triangles).
MA-H-G-10 Students will use properties of quadrilaterals such as classification.
MA-H-G-11 Students will use properties of other polygons.
MA-H-G-13 Students will use inscribed and circumscribed polygons.
MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.
MA-H-G-18 Students will convert from one measure to another within the same system.

Task 4 Lay out, cut and erect rafters to build a hip roof and/or other types of roof

MA-H-G-1 Students will find angle relationships such as vertical angles, linear pairs, complementary angles, and supplementary angles.
MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.
MA-H-G-4 Students will connect geometric diagrams with algebraic representations.
MA-H-G-7 Students will use angle and side relationships such as triangle sum theorem, triangle inequalities, isosceles and equilateral triangle properties, altitude, and median.
MA-H-G-8 Students will use Pythagorean theorem and its converse.
MA-H-G-9 Students will use right triangle relationships such as trigonometric ratios (45-45-90 and 30-60-90 triangles).
MA-H-G-10 Students will use properties of quadrilaterals such as classification.

MA-H-G-11 Students will use properties of other polygons.
MA-H-G-18 Students will convert from one measure to another within the same system.

Task 5 Install purlins, collar ties and knee walls

MA-H-G-4 Students will connect geometric diagrams with algebraic representations.
MA-H-G-14 Students will prove triangles and other polygons congruent and similar, and explore corresponding parts relationships.

Task 6 Cut and install ceiling joist

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-14 Students will prove triangles and other polygons congruent and similar, and explore corresponding parts relationships.

Task 7 Frame roof openings and roof saddles

MA-H-G-7 Students will use angle and side relationships such as triangle sum theorem, triangle inequalities, isosceles and equilateral triangle properties, altitude, and median.

MA-H-G-14 Students will prove triangles and other polygons congruent and similar, and explore corresponding parts relationships.

Task 8 Install roof sheathing

MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.

Task 9 Install roofing felt

Task 10 Install roof flashing

Task 11 Install roof and bonded half-lap roofing

Task 12 Install shingles

Task 13 Frame dormers

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-3 Students will find the intersection of lines, planes, and solids.

MA-H-G-4 Students will connect geometric diagrams with algebraic representations.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

MA-H-G-18 Students will convert from one measure to another within the same system.

Task 14 Install attic vents

MA-H-G-3 Students will find the intersection of lines, planes, and solids.

MA-H-G-7 Students will use angle and side relationships such as triangle sum theorem, triangle inequalities, isosceles and equilateral triangle properties, altitude, and median.

MA-H-G-11 Students will use properties of other polygons.

MA-H-G-12 Students will use properties of circles, arcs, chords, central angles, inscribed angles, and concentric angles.

MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.

Task 15 Cut and install tail and jack rafters

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-18 Students will convert from one measure to another within the same system.

MA-H-G-20 Students will connect the concepts of slope, distance, and midpoint to coordinate geometry.

Task 16 Install prefabricated trusses

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-4 Students will connect geometric diagrams with algebraic representations.

Task 17 Cut, construct and install trusses

MA-H-G-1 Students will find angle relationships such as vertical angles, linear pairs, complementary angles, and supplementary angles.

MA-H-G-4 Students will connect geometric diagrams with algebraic representations.

MA-H-G-6 Students will describe, draw, and construct two-dimensional and three-dimensional figures.

MA-H-G-7 Students will use angle and side relationships such as triangle sum theorem, triangle inequalities, isosceles and equilateral triangle properties, altitude, and median.

MA-H-G-8 Students will use Pythagorean theorem and its converse.

MA-H-G-9 Students will use right triangle relationships such as trigonometric ratios (45-45-90 and 30-60-90 triangles).

MA-H-G-11 Students will use properties of other polygons.

MA-H-G-14 Students will prove triangles and other polygons congruent and similar, and explore corresponding parts relationships.

MA-H-G-15 Students will use proportional reasoning to solve real world problems, to do indirect measurements, and to make scale drawings.

MA-H-G-16 Students will use relationships among one-, two-, and three-dimensional measures.

MA-H-G-18 Students will convert from one measure to another within the same system.

Site Layout and Foundations

Task List/Program of Studies Alignment

Task 1 Establish elevation reference points from a bench mark with builder's level, transit or laser level.

- MA-H-G-9 Students will use right triangle relationships such as trigonometric ratios (45-45-90 and 30-60-90 triangles).
- MA-H-G-15 Students will use proportional reasoning to solve real world problems, to do indirect measurements, and to make scale drawings.
- MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.
- MA-H-G-18 Students will convert from one measure to another within the same system.

Task 2 Lay out building site with transit

- MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.
- MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.
- MA-H-G-7 Students will use angle and side relationships such as triangle sum theorem, triangle inequalities, isosceles and equilateral triangle properties, altitude, and median.
- MA-H-G-8 Students will use Pythagorean theorem and its converse.
- MA-H-G-9 Students will use right triangle relationships such as trigonometric ratios (45-45-90 and 30-60-90 triangles).
- MA-H-G-10 Students will use properties of quadrilaterals such as classification.
- MA-H-G-12 Students will use properties of circles, arcs, chords, central angles, inscribed angles, and concentric circles.
- MA-H-G-18 Students will convert from one measure to another within the same system.

Task 3 Establish plot boundary lines or property lines

MA-H-G-15 Students will use proportional reasoning to solve real world problems, to do indirect measurements, and to make scale drawings.

MA-H-G-18 Students will convert from one measure to another within the same system.

MA-H-G-19 Students will represent geometric figures and properties using coordinates.

MA-H-G-20 Students will connect the concepts of slope, distance, and midpoint to coordinate geometry.

Task 4 Locate corners using triangulation, parallel and diagonal methods

MA-H-G-8 Students will use Pythagorean theorem and its converse.

MA-H-G-10 Students will use properties of quadrilaterals such as classification.

MA-H-G-18 Students will convert from one measure to another within the same system.

Task 5 Locate corners using builder's transit

MA-H-G-9 Students will use right triangle relationships such as trigonometric ratios (45-45-90 and 30-60-90 triangles).

MA-H-G-12 Students will use properties of circles, arcs, chords, central angles, inscribed angles, and concentric circles.

Task 6 Align installations for level

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-19 Students will represent geometric figures and properties using coordinates.

MA-H-G-20 Students will connect the concepts of slope, distance, and midpoint to coordinate geometry.

Task 7 Calculate the quantity of concrete blocks and common face brick needed for a concrete block wall

MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.

MA-H-G-18 Students will convert from one measure to another within the same system.

Task 8 Calculate the amount of concrete needed for footings and foundation walls

MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.

MA-H-G-18 Students will convert from one measure to another within the same system.

Task 9 Construct footer forms

MA-H-G-10 Students will use properties of quadrilaterals such as classification.

MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.

MA-H-G-18 Students will convert from one measure to another within the same system.

Task 10 Construct step footer forms

MA-H-G-10 Students will use properties of quadrilaterals such as classification.

MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.

MA-H-G-18 Students will convert from one measure to another within the same system.

Task 11 Cut and install footer forms

MA-H-G-10 Students will use properties of quadrilaterals such as classification.

MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.

MA-H-G-18 Students will convert from one measure to another within the same system.

Task 12 Cut and install wall forms

MA-H-G-6 Students will describe, draw, and construct two-dimensional and three-dimensional figures.

MA-H-G-12 Students will use properties of circles, arcs, chords, central angles, inscribed angles, and concentric angles.

MA-H-G-13 Students will use inscribed and circumscribed polygons.

MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.

MA-H-G-18 Students will convert from one measure to another within the same system.

Task 13 Cut and install column and pier forms

MA-H-G-6 Students will describe, draw, and construct two-dimensional and three-dimensional figures.
MA-H-G-10 Students will use properties of quadrilaterals such as classification.
MA-H-G-12 Students will use properties of circles, arcs, chords, central angles, inscribed angles, and concentric angles.
MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.
MA-H-G-18 Students will convert from one measure to another within the same system.

Task 14 Cut and install forms for concrete stairs

MA-H-G-1 Students will find angle relationships such as vertical angles, linear pairs, complementary angles, and supplementary angles.
MA-H-G-6 Students will describe, draw, and construct two-dimensional and three-dimensional figures.
MA-H-G-10 Students will use properties of quadrilaterals such as classification.
MA-H-G-14 Students will prove triangles and other polygons congruent and similar, and explore corresponding parts relationships.
MA-H-G-16 Students will use relationships among one-, two-, and three-dimensional measures.
MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.
MA-H-G-18 Students will convert from one measure to another within the same system.
MA-H-G-20 Students will connect the concepts of slope, distance, and midpoint to coordinate geometry.
MA-H-G-21 Students will use reflections, translations, rotations, and dilations.
MA-H-G-23 Students will use the relationship between a figure and its image under a transformation (congruence, similarity, size, and scale changes).

Task 15 Dismantle concrete forms

Task 16 Clean and repair concrete forms

Floor and Wall Framing

Task List/Program of Studies Alignment

Task 1 Install sill plates to foundation walls

- MA-H-G-1 Students will find angle relationships such as vertical angles, linear pairs, complementary angles, and supplementary angles.
- MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.
- MA-H-G-3 Students will find the intersection of lines, planes, and solids.
- MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons
- MA-H-G-8 Students will use Pythagorean theorem and its converse.

Task 2 Install floor joist

- MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.
- MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.
- MA-H-G-19 Students will represent geometric figures and properties using coordinates.

Task 3 Install Lally posts

- MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.
- MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 4 Install steel beams

- MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 5 Install wood beams

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 6 Frame built-up girders

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 7 Frame floor openings

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 8 Lay sub-floors and underlayment

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 9 Cut and install stair components

MA-H-G-1 Students will find angle relationships such as vertical angles, linear pairs, complementary angles, and supplementary angles.

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-3 Students will find the intersection of lines, planes, and solids.

MA-H-G-4 Students will connect geometric diagrams with algebraic representations.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

MA-H-G-6 Students will describe, draw, and construct two-dimensional and three-dimensional figures.

MA-H-G-17 Students will use perimeter, circumference, and area of planar regions to determine volume and surface area of solids.

Task 10 Lay out and install stairs

MA-H-G-4 Students will connect geometric diagrams with algebraic representations.

MA-H-G-19 Students will represent geometric figures and properties using coordinates.

MA-H-G-20 Students will connect the concepts of slope, distance, and midpoint to coordinate geometry.

Task 11 Construct, lay out and install exterior walls

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 12 Frame wall openings

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 13 Lay out, construct, install and frame partition walls

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 14 Install exterior wall sheathing

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

Task 15 Frame special partitions

MA-H-G-2 Students will identify relationships between and among points, lines, and planes, such as betweenness of points, midpoint, distance, collinear, coplanar, parallel, and skew lines.

MA-H-G-5 Students will integrate constructions such as segments and angles, segment bisectors, perpendiculars, angle bisectors, parallel lines, circles, arcs, and polygons.

MA-H-G-22 Students will explore concepts of vectors.

This program of studies bullet is not directly addressed in the content of either of the two courses. This topic will need to be addressed through the use of materials recommended in the attached documents.

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http://www.migrant.org/index.cfm

Ceiling and Roof Framing

Second-Sixth Weeks:

Cut, construct, and install trusses.

Geometry Terms:

Congruent
Vertical angles
Adjacent angles
Linear pairs
Complementary angles
Supplementary angles
Midpoint
Distance
Perpendicular
Perpendicular bisector
Parallel
Angles formed by parallel lines: Corresponding angles
Alternate interior angles
Same-side interior angles
Alternate exterior angles
Same-side exterior angles
Isosceles triangle
Altitude
Median
SAS
SSS
ASA
CPCTC
Trigonometry
Cosine ratio
Sine ratio
Tangent ratio
SOHCAHTOA

Geometric Concepts and Theorems:

1. Vertical angles are congruent.
2. Linear pairs are always supplementary.
3. Supplementary angle measures have a sum of 180° and do not have to be adjacent angles.
4. Complementary angle measures have a sum of 90° and also do not have to be adjacent angles.
5. Midpoint formula: $(a + b)/2$ where a and b represent the endpoints of the segment.
6. Midpoint formula using a coordinate system: $(x_1 + x_2)/2, (y_1 + y_2)/2$
7. Distance formula using a coordinate system: $\sqrt{((x_1 - x_2)^2 + (y_1 - y_2)^2)}$
8. Congruent and supplementary angles formed by parallel lines
9. Construct one-, two-, and three- dimensional figures.
10. Sum of the interior angles of any triangle is always 180°.
11. Triangle Inequality Theorem

12. Isosceles Triangle Properties
13. Pythagorean Theorem
14. Special Right Triangles: 45°-45°-45° and 30°-60°-90° triangles
15. Prove (verify) triangles and other figures are congruent.
16. Determine lengths of segments and measures of angles using congruent shapes. (cpctc)
17. Indirect measurement
18. Use relationships among one-, two-, and three-dimensional measures.
19. Convert from one measure to another within the same system.

References:

	Cord Geometry	**Applied Mathematics**	**Math for Carpentry & the Construction Trades**
1.	pg. 1-23, exercises 1-6		pp. 125-127
2.	pg. 1-28, exercises 1-20		
3.	pg. 1-28, exercises 1-20		pp.125-127
4.	pg. 1-28, exercises 1-20		pp. 125-127
5.	pg. 1-16, exercises 1-24		
6.	pg. 7-8, exercises 1-24	unit 35	
7.	pg. 7-8, exercises 1-24	unit 35	
8.	pg. 3-16, exercises 1-26		
9.	pp. 1-36 through 1-40, 10-8, 10-15, 10-59	units 7, 34	
10.	pg. 3-32, exercises 1-20		
11.	pg. 3-43, exercises 1-5		
12.	pg. 4-28, exercises 1-6		
13.	pg. 6-36, exercises 1-22		pg. 136
14.	pg. 6-42, exercises 1-21	unit 21	pp. 139-141
15.	pg. 4-8, exercises 1-18; pg. 4-15, exercises 1-8		
16.	pg. 4-22		
17.	pg. 6-24, exercises 10-14; pg. 11-56, exercises 12-17/	unit 22	

18. units 3, 7, 8, 34 pg. 79, pg. 86, pg. 90, pg. 198

19. unit 3

Seventh week:
Plan a roof system. **Lay out, cut, and erect rafters to build a gambrel roof.**

Geometry terms:
Parallel
Acute triangle
Right triangle
Obtuse triangle
Scalene triangle
Isosceles triangle
Equilateral triangle
Coordinate points
Sine ratio
Cosine ratio
Tangent ratio
SOHCAHTOA
Slope
Midpoint
Distance
Inscribed polygon
Quadrilateral
Parallelogram
Rhombus
Rectangle
Square
Trapezoid

Geometric Concepts and Theorems:
1. Find angle relationships using such as Triangle Sum Theorem.
2. Congruent and supplementary angles formed by parallel lines
3. Constructions used to determine midpoints, parallel lines, perpendiculars, etc.
4. Triangle sum theorem
5. Equilateral triangle properties (12/12 sloped roofs)
6. Indirect measurements to make scale drawings and proportional charts, etc.
7. Trig ratios
8. Pythagorean Theorem and the Converse of the Pythagorean Theorem
9. Plot a design on a coordinate system using ordered pairs.
10. Determine slope, distance, and midpoint on a coordinate system.
11. Convert from one measure to another.
12. Determine the angle and side measures of various quadrilaterals.
13. Use inscribed polygons in various figures.
14. Convert from one measure to another.

15. Determine the surface area and volume of various three-dimensional figures.

References:
Cord Geometry

1. Pg. 3-32, exercises 1-20

2. pg. 3-16, exercises 1-26

3. pp. 1-36 through 1-40

4. pg. 3-32, exercises 1-20

5. pp. 3-26 through 3-27

6. pg. 6-8, exercises 1-15

7. pg. 11-55, exercises 1-18,; pg. 11-60, exercises 1-20

8. pg. 6-36, exercises 1-30

9.

10. pg. 7-24, exercises 1-24; pg. 7-8, exercises 1-24

11.

12. pg. 5-18, exercises 1-22; pg. 5-24, exercises 1-11;
pg. 5-30, exercises 1-23; pg. 5-37, exercises 1-11

13.

14. pg. 9-16, exercises 16-19

15. Blue sheet from CATS test (see attachment);
pp. 10-23, 10-31, 10-39, 10-44, 10-51.

Eighth week:

Layout, cut, and erect rafter to build a gable roof.

Geometric Terms:

Distance
Sine ratio
Cosine ratio
Tangent ratio
SOHCAHTOA

Geometric Concepts and Theorems:

1. Determine the distance using either the distance formula or Pythagorean Theorem.
2. Triangle Sum Theorem
3. Using trig ratios to determine angle and side measures.
4. Convert from one measure to another

References:
Cord Geometry
1. pp. 7-8, 6-36

2.pg. 3-32

3. pp. 11-55, 11-60

4.

Ninth week:

Layout, cut, and erect rafters to build a hip roof and/or other roof types.

Geometric Terms:

Vertical angles
Complementary angles
Supplementary angles
Linear pairs

Midpoint
Sine ratio
Cosine ratio
Tangent ratio
SOHCAHTOA
Other polygons such as pentagon, octagon, etc.
Parallel
Parallelogram
Rectangle
Rhombus
Square
Trapezoid
Isosceles trapezoid
Similar

Geometric Concepts and Theorems:

1. Vertical Angle Theorem
2. Linear pairs are always supplementary.
3. Determine a midpoint.
4. Determine the angle and side measures of right triangles using trig.
5. Determine angle and side measures of various figures.
6. Determine angle and side measures of various triangles using such as Triangle Sum Theorem, Special Right Triangles.
7. Use various properties of special quadrilaterals.
8. Determine the angle and side measures of similar figures especially triangles.
9. Verify similar triangles using SSS and AA.
10. Apply triangle inequalities relationships such as the smallest angle is always opposite the shortest side of any triangle.)
11. Use the Converse of the Pythagorean Theorem to determine whether a triangle is a right, acute, or obtuse.

References:
Cord Geometry

1. Pg. 1-23

2. pg. 1-28

3. pg. 1-16

4. pp. 11-55, 11-60

5.

6. pp. 6-42, 3-32

7. pp. 5-18, 5-24, 5-30, 5-37

8. pg. 6-14, 6-23

9. pg. 6-23

10. pg. 3-47

11. pg. 6-35

Tenth week:

Install purlins, collar ties, and knee walls.

Geometric Terms:
1. similar
2. SS
3. AAA

Geometric Concepts and Theorems:
1. Prove (verify) triangles are similar using either SSS or AA.
2. Determine the angle and side measures of similar figures.

References:
Cord Geometry
1. pg. 6-23
2. pg. 6-23

Eleventh week:

Cut and install ceiling joists.

Geometric Terms:
Parallel
Congruent
Supplementary angles
Similar

Geometric Concepts and Theorems:
1. Use parallel lines to determine angle measures.
2. Use congruent and supplementary angle measures to determine parallel lines.
3. Determine the angle and side measures of similar figures.

References:
Cord Geometry
1. pg. 3-16, exercises 1-26

2.pg. 3-23, exercises 1-21

3. pg. 6-23

Twelfth week:

Frame roof openings and roof saddles.

Geometric Terms:
Congruent triangles
SAS
ASA
SSS
CPCTC

Geometric Concepts and Theorems:
1. Determine the angle and side measures of congruent triangles by applying CPCTC.
2. Prove (verify) two triangles are congruent by applying SAS, SSS, and ASA.
3. Apply triangle inequalities relationships such as the smallest angle is always opposite the shortest side of any triangle.)

References:
Cord Geometry
1. pg. 4-8

2. pg. 4-15

3. pg. 3-47

Thirteenth week:

Install roof sheathing, install flashing, install roof. Bonded half-lap roofing, and also shingles.

Geometric Terms:
Coplanar
Rectangular prism

Cylinder
Triangular prism
Cone
Pyramid
Sphere

Geometric Concepts and Theorems:
1. Determine if various figures are coplanar or noncoplanar.
2. Determine the area of two-dimensional figures.
3. Determine the surface area of various three-dimensional figures.
4. Determine the volume of various three-dimensional figures.

References:
Cord Geometry
1. pg. 1-5

2. Blue sheet from CATS testing, pp. 8-8, 8-14, 8-20, 8-24, 8-29

3. Blue sheet from CATS testing, pp. 10-23, 10-31, 10-39, 10-44, 10-51

4. Blue sheet from CATS testing, pp. 10-23, 10-31, 10-39. 10-44, 10-51

Fourteenth week:

Frame dormers.

Geometric Terms:
Parallel lines and planes
Intersecting lines and planes.
Skew lines

Geometric Concepts and Theorems:
1. Determine which lines and /or planes are parallel, intersecting, or skew.
2. Use the intersection of planes and solids in construction.
3. Constructions used to determine midpoints, parallel lines, perpendiculars, etc.
4. Apply triangle inequalities relationships such as the smallest angle is always opposite the shortest side of any triangle.)

1. Convert from one measure to another.

References:
Cord Geometry
1. pg. 3-9

2.

3. pp. 1-36 through 1-40

4. pg. 3-37

5.

Fifteenth week:

Install attic vents.

Geometric Terms:
Intersection
Equilateral triangles
Circle
Arc
Chord
Central angle
Inscribed angle
Concentric circles

Geometric Concepts and Theorems:
1. Use the intersection of planes and solids to construct various figures.
2. Use equilateral triangle properties to determine various measures.
3. Determine the surface area and volume of various geometric solids.
4. Identify the basic parts of a circle.
5. Determine the basic angle measures of a circle such as central and inscribed angles.

References:
Cord Geometry
1.

2. pp. 3-26, 3-27

3. Blue sheet from CATS test, pp. 10-23, 10-31, 10-39, 10-44, 10-51

4. pg. 8-26

5.pg. 9-30

Sixteenth week:

Cut and install tail and jack rafters.

Geometric Terms:
Parallel
Angles formed by parallel lines: corresponding angles, same-side interior angles, alternate interior angles, same-side exterior angles, and alternate exterior angles.
Congruent angles
Supplementary angles
Slope

Geometric Concepts and Theorems:
1. use the congruent and supplementary angles formed by parallel lines to construct rafters.
2. Determine slope of various segments in a figure using a coordinate system.
3. Convert measures, as needed, in a figure.

References:
Cord Geometry
1. pg. 3-16

2. pg. 7-24

3.

Seventeenth week:

Install prefabricated trusses.

Geometric Terms:
Congruent
Vertical angles
Midpoint
Parallel lines
Angles formed by parallel lines: corresponding angles, same-side interior angles, alternate-interior angles, same-side exterior angles, and alternate exterior angles
Skew lines
Intersecting

Geometric Concepts and Theorems:
1. Vertical angles are congruent.
2. Determine the midpoint.
3. Identify the angle relationships formed by parallel lines.
4. Identify if two lines are parallel, intersecting, or skew lines.

References:
Cord Geometry
1. pg. 1-23

2.pg. 1-16

3. pg. 3-16

4. pg. 3-9

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